

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A process for preparation of a stimulable phosphor represented by the following formula (I):



in which A is at least one element selected from the group consisting of Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er, Tm, and Yb; L is at one element selected from the group consisting of Zr, Nb, Hf, Ta, Sn, Sm, Tm and Yb, provided that L differs from A; x, y and z are numbers satisfying the conditions of  $0 \leq x$ ,  $0 \leq y$ ,  $0 \leq z$  and  $1.5 \leq x+y+z \leq 2.2$ ; p is a number to neutralize the phosphor in regard to electric charge thereof, a is a number satisfying the condition of  $2 \times 10^{-5} < a < 6 \times 10^{-2}$ , and b is a number satisfying the condition of  $0 < b < 1 \times 10^{-2}$ , in which the stimulable phosphor absorbs and stores a portion of energy of radiation or ultraviolet rays when it is exposed to the radiation or ultraviolet rays, and emits stimulated light in a visible wavelength region when exposed to electromagnetic waves;

which comprises the steps of:

(1) heating a rare earth carboxylate represented by the formula (II):



in which M is at least one rare earth element selected from the group consisting of Lu, Y and Gd;  
R<sup>1</sup> is an aliphatic hydrocarbon group having 1 to 4 carbon atoms which has a substituent or no substituent; and m is a number satisfying the condition of  $0 \leq m \leq 4$ ;

with an alkoxyalcohol represented by the formula (III) to obtain a solution:



in which R<sup>2</sup> is an aliphatic hydrocarbon group having 1 to 4 carbon atoms or a substituted aliphatic hydrocarbon group having 3 to 6 carbon atoms; and n is 2 or 3;

(2) adding to the obtained solution a silicon alkoxide represented by the formula (IV):



in which R<sup>3</sup> is an aliphatic hydrocarbon group having 1 to 4 carbon atoms

and a compound containing the element represented by A, and if required a compound containing the element represented by L, to prepare a mixture; and

(3) subjecting the prepared mixture to thermal decomposition under reductive atmosphere.

2. (original): The process of claim 1, wherein R<sup>1</sup> in the formula (II) is methyl.

3. (original): The process of claim 1, wherein the alkoxy-alcohol represented by the formula (III) is at least one compound selected from the group consisting of 2-methoxyethanol, 2-ethoxyethanol, 1-methoxy-2-propanol, 1-ethoxy-2-propanol, and 3-ethoxy-1-propanol.

4. (original): The process of claim 1, wherein  $R^3$  in the formula (IV) is ethyl.

5. (currently amended): The process of claim 1, comprising the steps of

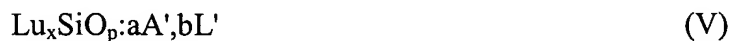
(1) heating a rare earth carboxylate that is an acetate of at least one element selected from the group consisting of Lu, Y and Gd with at least one alcohol that is an alkoxyalcohol selected from the group consisting of 2-methoxyethanol and 2-ethoxyethanol, to obtain a solution;

(2) adding to the obtained solution a silicon alkoxide that is tetraethoxysilane and a compound containing the element represented by A, and if required, a compound the element represented by L, to prepare a mixture;

and

(3) subjecting the prepared mixture to thermal decomposition.

6. (currently amended): The process of claim 1, wherein the phosphor is represented by the formula (V):



in which A is A' and is at least one element selected from the group consisting of Ce and Tb; L is L' and is at least one element selected from the group consisting of Zr, Hf, Sm and Yb, provided that L' differs from A'; x is a number satisfying the condition of  $1.5 \leq x \leq 2.2$ ; y is zero; z is zero; p is a number to neutralize the phosphor in regard to electric charge thereof, and a is a number

satisfying the condition of

$2 \times 10^{-5} < a < 6 \times 10^{-2}$ ; [,] and b is a number satisfying the condition of  $0 \leq b \leq 1 \times 10^{-2}$ .

7. (currently amended): A process for preparation of a stimulable phosphor represented by the formula (I):



in which A is at least one element selected from the group consisting of Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er, Tm, and Yb; L is at one element selected from the group consisting of Zr, Nb, Hf, Ta, Sn, Sm, Tm and Yb, provided that L differs from A; x, y and z are numbers satisfying the conditions of  $0 \leq x$ ,  $0 \leq y$ ,  $0 \leq z$  and  $1.5 \leq x+y+z \leq 2.2$ ; p is a number to neutralize the phosphor in regard to electric charge thereof, a is a number satisfying the condition of  $2 \times 10^{-5} < a < 6 \times 10^{-2}$ , and b is a number satisfying the condition of  $0 \leq b < 1 \times 10^{-2}$ , in which the stimulable phosphor absorbs and stores a portion of energy of radiation or ultraviolet rays when it is exposed to the radiation or ultraviolet rays, and emits stimulated light in a visible wavelength region when exposed to electromagnetic waves;

which comprises the steps of:

(1) heating a rare earth carboxylate represented by the formula (II)



in which M is at least one rare earth element selected from the group consisting of Lu, Y and Gd;  $\text{R}^1$  is an aliphatic hydrocarbon group having 1 to 4 carbon atoms which has a substituent or no substituent; and m is a number satisfying the condition of  $0 \leq m \leq 4$ ;

with an alkoxyalcohol represented by the formula (III), to obtain a solution:



in which  $R^2$  is an aliphatic hydrocarbon group having 1 to 4 carbon atoms or a substituted aliphatic hydrocarbon group having 3 to 6 carbon atoms; and n is 2 or 3;

(2) adding to the obtained solution a silicon alkoxide represented by the formula (IV):



in which  $R^3$  is an aliphatic hydrocarbon group having 1 to 4 carbon atoms and a compound containing the element represented by A, and if required a compound containing the element represented by L, to prepare a mixture;

(3) bringing water into contact with the prepared mixture to give a gel; and

(4) subjecting the given gel to thermal decomposition under reductive atmosphere.

8. (original): The process of claim 7, wherein  $R^1$  in the formula (II) is methyl.

9. (original): The process of claim 7, wherein the alkoxy-alcohol represented by the formula (III) is at least one compound selected from the group consisting of 2-methoxyethanol, 2-ethoxyethanol, 1-methoxy-2-propanol, 1-ethoxy-2-propanol and 3-ethoxy-1-propanol.

10. (original): The process of claim 7, wherein  $R^3$  in the formula (IV) is ethyl.

11. (currently amended): The process of claim 7, comprising the steps of

(1) heating a rare earth carboxylate that is an acetate of at least one element selected from the group consisting of Lu, Y, and Gd with at least one alcohol that is an alkoxyalcohol selected from the group consisting of 2-methoxyethanol and 2-ethoxyethanol, to obtain a solution;

(2) adding to the obtained solution a silicon alkoxide that is tetraethoxysilane and a compound containing the element represented by A, and if required a compound containing the element represented by L, to prepare a mixture; and

(3) bringing water into contact with the prepared mixture, to give a gel; and

(4) subjecting the given gel to thermal decomposition.

12. (currently amended): The process of claim 7, wherein the phosphor is represented by the following formula (V):



in which A is A' and is at least one element selected from the group consisting of Ce and Tb; L is L' and is at least one element selected from the group consisting of Zr, Hf, Sm and Yb, provided that L' differs from A'; x is a number satisfying the condition of  $1.5 \leq x \leq 2.2$ ; y is zero; z is zero; p is a number to neutralize the phosphor in regard to electric charge thereof, and a is a number satisfying the condition of  $2 \times 10^{-5} < a < 6 \times 10^{-2}$ ; [,] and b is a number satisfying the condition of  $0 \leq b < 1 \times 10^{-2}$ .

atmosphere. Thus, the process of the de Leeuw et al apparently does not prepare a stimuable phosphor.

In summary, the process of the de Leeuw et al reference differs from the present invention process not only in the target product (even though the chemical formula appears the same), but also differs in the steps involved in the process.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the rejection under 35 U.S.C. 103(a) has been overcome, and the objections to the claims have been overcome, such that all of claims 1-12 are now in condition for allowance.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby earnestly solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C. telephone number listed below.